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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,067

03/31/2004

Steven T. Fink

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06/13/2005

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EXAMINER

SHARP, JEFFREY ANDREW

ART UNIT

PAPER NUMBER

3677

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,067

Applicant(s)

FINK, STEVEN T.

Examiner

Jeffrey Sharp

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 and 38-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 and 38-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

[1] This action is responsive to Applicant's remarks/amendment filed on 22 April 2005 with regard to the Official Office action mailed on 12 January 2005.

Status of Claims

[2] Claims 1-36 and 38-48 are pending. Claims 1, 8, 23, and 30 have been amended. Claim 37 has been cancelled. Claims 44-48 have been added.

Drawings

[3] The drawing(s) were previously objected for informalities (prior art figure 5 was not labeled). In view of Applicant's replacement drawing(s) submitted on 22 April 2005 (figure was labeled "background art"), all previous objection(s) to the drawings have been withdrawn. Accordingly, the changes have been entered.

Specification

[4] Applicant's amendment to the disclosure filed on 22 April 2005 has been entered. It appears that no new matter has been entered.

New Grounds of Rejection

[5] The amendment to the claims filed on 22 April 2005 has necessitated the following new grounds of rejection.

Claim Rejections - 35 USC § 112

[6] The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[7] Claims 38 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 38 and 39 depend from cancelled claim 37. Therefore, there is no antecedent basis for the limitations therein, rendering the claims indefinite.

Claim Rejections - 35 USC § 103

[8] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[9] Claims 1-5, 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynn et al. US-2003/0180556 in view of David et al. US-6,267,543.

In short, Lynn et al. "discloses the broad concept of coating any exposed parts of a plasma processing chamber including nuts and bolts", as stated by the Applicant in the remarks submitted on 22 April 2005. Lynn et al. teaches **coating** any component within plasma machinery (e.g., "process chamber") including screws, nuts, bolts, and pins (paragraph 0011) in order to reduce erosion to the component. From the teachings of Lynn et al., it would be apparent to one of ordinary skill in the art to use a coating comprising silicon, quartz, ceramic

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and/or any other suitable insulating material that can withstand the temperatures of a plasma reactor. Lynn specifically mentions anodized aluminum (paragraph 0016). Note that it would be obvious to those of ordinary skill in the art, that if fasteners used within a plasma processing tool, are indeed, coated, then a protective shield over said fasteners would be redundant and unnecessary.

However, Lynn et al fails to disclose expressly, using a quarter turn-type fastener in lieu of a threaded fastener and mating component for the purposes of speedily connecting and/or disconnecting plasma processing tool components.

In short, David et al. suggests a quarter turn type fastener comprising a stem and pin extending at one end, in order to fasten two objects or the like together in a quick manner. David et al. makes known the fact that "screw-type fasteners take too long to assemble and disassemble, require relatively precise tolerances in panel fit, and are subject to cross-threading, stripping, and under- or over tightening."¹ Note that David et al. only broadly claims in claim 1, "A fastener for fastening a first panel to a second panel", and does not limit the intended use or advantageous application thereof. A plasma processing component can be broadly construed as a "panel", and there is no suggestion found in the David et al. reference that would suggest incompatibility with a plasma processing tool. The teachings of David et al. would convey to those of ordinary skill in the art, that quarter turn fasteners are advantageous when quick assembly and/or removal is required. David et al. teach a fastening component having a first surface (1,2), second surface (bottom of 2), stem (shank 3) with a smaller cross-section than the second surface, and orthogonal locking pin (4,5). Note that David et al. also teach a plurality of components (10,11)

¹ Col 1 lines 16-19.

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-- each of said components comprising slots, the last component comprising stops (142,140) to prevent the pin (136) from further rotation thereby preventing the components from separation.

David et al. does not limit the use of the fastening component, but rather suggests that the component may be used in many devices.

At the time of invention, it would have been obvious to one of ordinary skill in the art, to use the fastener taught by David et al. within a plasma processing tool (instead of conventional threaded fasteners) as an intended use, because of the quick engagement and disengagement advantages associated therewith, and in order to eliminate the problems associated with threaded fasteners (in this case, threaded fasteners within a plasma processing tool). It would have also been obvious from the teachings of Lynn et al., to coat any fastener or substrate within a plasma processing tool, in order to protect the fastener from the harsh plasma environment.

[10] Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynn et al. v. David et al. as discussed above, in even further view of either Marty US-2,399,750 or Preziosi US-3,136,017.

Lynn et al. v. David et al. suggests all of the limitations of the instant claim 1, however, fails to disclose expressly the way in which the pin is secured to the stem.

Marty teaches press-fitting the pin (page 2 Col 2 lines 1-2).

Preziosi teaches that providing pins can be done in any desirable fashion (Col 2 lines 7-8).

At the time of invention, it would have been an obvious matter of design choice to one of ordinary skill in the art to modify the pin member taught by David et al., to be integral with the stem in any fashion whether brazing, interference fit, forming, casting, etc. as suggested by the

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Marty and Preziosi references. Further, it has been held that making two parts unitary is within the general skill of a worker in the art. *In re Larson*, 144 USPQ 347 (CCPA 1965); *In re Lockart*, 90 USPQ 214 (CCPA 1951). It has also been held that the term "integral" is sufficiently broad to embrace constructions united by such means as fastening and welding. *In re Hotte*, 177 USPQ 326, 328 (CCPA 1973).

[11] Claims 8-12, 15-22, 30-36, and 40-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynn et al. v. David et al. as discussed above, in further view of either Bowers US-5,795,122 or Csik et al. US-2003/0185653.

David et al. discloses the second contacting surface of the stud (i.e., surface that the pin of the stem contacts) to be integrally fixed to the second object, and fail to disclose expressly, a separate second fastening component being an adjustable locking element comprising a helical coil.

Bowers discloses solving the problem of varying object thicknesses by putting the second contacting surface on an adjustable, externally threaded member to be contained within a threaded bore of a second object. From the teachings of Bower, one of ordinary skill in the art would recognize and appreciate the advantages of making the second contact surface infinitely adjustable with respect to the second object to eliminate the need for closely matched fasteners. See Bowers, Col 2 lines 5-13, 24-39.

Csik et al. likewise, shows a second contacting surface communicating with an orthogonally-positioned pin at the end of a stem of a fastening component, said second contacting surface being provided with an external helical thread so as to provide a means for

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axially adjusting and positioning said second contacting surface. This axially adjustable contacting surface eliminates the need for using differently sized fastening components for a given range of thicknesses for the second object.

At the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the second contacting surface taught by either David et al., to comprise a second fastening component having an external thread-gripping means (i.e., 'locking element') as suggested by either Bowers or Csik et al., in order to provide means for axial adjustment -- said means allowing for a standard size stem to be used to fasten second objects of various thicknesses.

As for the limitations in claims 30-36, the method steps are inherent from the disclosures of the aforementioned references, as would be recognized by those of ordinary skill in the art.

As for claim 41, the elastic element (David et al. spring 120) is shown between the first fastening component and first object. Spring steel may be electrically conductive as seen in battery terminals.

As for claims 40-43, note that it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See also, *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). In the instant case, the conductive elastic element shown by David et al. (120) may be alternatively positioned between the two objects instead of between the fastener components and one of the objects. See, Ellis US-3,460,210, which makes obvious, the placement of an elastic element (13) between first and second objects as an equivalent means to bias the objects away from each other (whereas David

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et al. show an elastic element between the first fastening component and first object). See also, Young US-2,119,764, which suggests placing an elastic element (12) between the second contacting surface, and an object as an alternative to placing the elastic element between a first fastening component and first object as shown by David et al. Note that one of ordinary skill in the art would appreciate that the elastic element could be placed at any place between the pin and bottom of the head of the first fastening component to achieve the same general function.

As for claims 44-47, Applicant suggests in the prior art figure 5 and in paragraph [0004] of the specification, that it is common in the art to fasten an upper electrode with a gas inject plate within a plasma processing tool, and therefore it would not be unobvious to use a quarter turn fastener between an upper electrode and gas inject plate. The David et al. reference clearly provides motivation to use a quarter turn fastener in lieu of a threaded fastener.

[12] Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynn et al. v. David et al. and either Bowers US-5,795,122 or Csik et al. US-2003/0185653 as discussed above, in even further view of either Marty US-2,399,750 or Preziosi US-3,136,017 for the same reasons discussed above for claims 6 and 7. The manner in which the locking pin is attached to the stem of the fastener is irrelevant, as the prior art suggests that it may be attached in any desirable fashion.

Response to Arguments/Remarks

[13] Applicant's arguments/remarks with regard to the prior art references of record have been fully considered, but are not persuasive.

Quarter turn fasteners are well known in the art for joining two panels (and the like)

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together as is clearly demonstrated by the prior art of record. They are desirable for their "quick" release and assembly function, because they require less assembly time than normal threaded fasteners and the like. Quarter turn fasteners have a "stem" portion that "at least partially protrudes through the first component and second component", and a "locking pin extending from at least one side of the stem". The prior art of record shows that the pin may be assembled to the stem in any fashion.²

Further, the teachings of Csik et al.³ and Bowers⁴ suggest the embodiment found in the present application figure 3, which employs an adjustable locking element (40) comprising a helical coil (i.e., "theaded engagement") in order to compensate for slight variations in stem length. In other words, by making the contact surface (second component surface side that contacts the pin) axially adjustable via threads, the same stem could be used with different panel thicknesses.

Moreover, Applicant states that prior art fasteners (e.g., threaded fasteners) such as that shown in the present application figure 5, are commonly made of an aluminum material that is subject to corrosion in harsh plasma environments. In particular, Applicant admits:

"The fastener is made of aluminum or some other material that erodes after exposure to plasma processes and that can subsequently contaminate a substrate being process[ed]."⁵

The Lynn et al. reference clearly teaches⁶ a "corrosive-resistant coating over aluminum substrates for use in plasma deposition and etch environments" the substrates including "screws,

² As evidenced by Marty (page 2 col 2 lines 1-2) and Preziosi (col 2 lines 7-8).

³ Figures 5 and 11, paragraph [0009]

⁴ Col 5 line 53 - Col 6 line 2.

⁵ paragraph [0004] lines 7-9.

⁶ paragraphs [0011] and [0016].

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nuts, [and] bolts". Therefore, the examiner maintains that there is sufficient motivation to coat a fastener within a plasma processing tool with a "material that is highly resistant to erosion resulting from plasma processing" as currently claimed by Applicant.

Therefore, the determination of obviousness in the present case lies in whether or not it would be apparent to one of ordinary skill in the art, to use a prior art quarter turn fastener in a plasma processing tool, because it is already known to coat fasteners with a resistant coating as evidenced by Lynn et al..

It is not required that the prior art disclose or suggest the properties newly-discovered by an applicant in order for there to be a prima facie case of obviousness. See *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897, 1905 (Fed. Cir. 1990). In the instant case, a prior art quarter turn fastener has been deemed advantageous for use within a plasma processing tool.

Moreover, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. See *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992); *In re Kronig*, 539 F.2d 1300, 190 USPQ 425 (CCPA 1976) and *In re Wilder*, 429 F.2d 447, 166 USPQ 545 (CCPA 1970).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F. 2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). In this regard, a conclusion of obviousness may be based on common knowledge and common sense of the

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person of ordinary skill in the art without any specific hint or suggestion in a particular reference.

In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

*It is to be noted for the record that the added limitation "wherein said fastening components are not shielded from said plasma by a plasma shield component" is arguable, because it would be necessary to remove a prior art shield to gain access to a prior art fastener within a plasma processing tool. In other words, a worker in the art would infringe this limitation every time a shield is removed to gain access to a fastener (be it to replace, tighten, remove, etc.). This limitation was discussed during the 21 March 2004 interview with Applicant.

*The mere fact that the prior art discloses additional structure (e.g., "shield") not claimed is irrelevant, because it has been held that the omission of an element or step and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184. In the instant case, Lynn et al. provides an anti-corrosion coating to fasteners within a plasma processing tool. Therefore, if the shield (element) taught by the prior art is removed (omission of said element), the fasteners (remaining elements) would perform the same anti-corrosive function as the shield (omitted element).

With regard to Applicant's argument that "there is no motivation whatsoever disclosed in any of the cited references to use such a stem and pin fastener device for joining plasma processing components together," David et al. makes known the fact that "screw-type fasteners take too long to assemble and disassemble, require relatively precise tolerances in panel fit, and are subject to cross-threading, stripping, and under- or over tightening."⁷ Therefore there must be at least some motivation whatsoever to employ a quarter turn fastener in lieu of a prior art

⁷ Col 1 lines 16-19.

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threaded fastener, regardless of what the application is. It is reminded that the prior art (in particular, David et al. '543) only broadly claims in claim 1, "A fastener for fastening a first panel to a second panel", and does not limit the intended use or advantageous application thereof. A plasma processing component can be broadly construed as a "panel", and there is no suggestion found in the David et al. reference that would suggest incompatibility with a plasma processing tool. Applicant is reminded that claims in a pending application should be given their broadest reasonable interpretation. *In re Pearson*, 181 USPQ 641 (CCPA 1974).

Applicant states that "even assuming...that a stem and pin fastener can be combined with a plasma processing chamber based on the cited references, none of the cited references disclose the details of such a configuration without a plasma shield component"⁸. It would be obvious to one having an ordinary skill in the art, that if a fastener comprises the coating taught by Lynn et al., a shield would not be necessary. Also note that it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See also, *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). In the instant case, the protective shield is being moved from the panel to around the fastener itself.

Applicant's statement that "Lynn et al...discloses the broad concept of coating any exposed parts of a plasma processing chamber including nuts and bolts" is acknowledged.

That said, all arguments are moot in view of the following new grounds of rejection necessitated by amendment.

⁸ Remarks, middle of page 17.

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The rejections of claims 8, 12, 15, 16, and 20-29 as being anticipated by David et al. or Golden have been withdrawn, as neither of the references expressly disclose or infer a plasma processing tool.

Conclusion

[14] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

[15] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

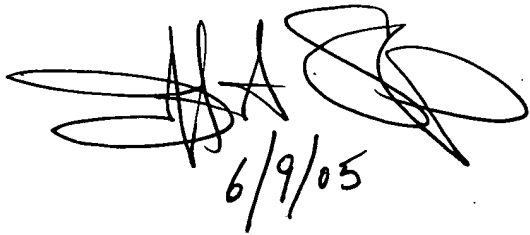
[16] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

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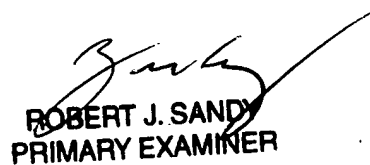
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS



Handwritten signature and date 6/9/05.



Handwritten signature of Robert J. Sandy, Primary Examiner.